REMARKS/ARGUMENTS

The Final Office Action of May 20, 2008 has been carefully reviewed and these remarks are responsive thereto. Claims 1, 3, 5-11, 13, 15-27 remain in this application. Claims 2, 4, 12 and 14 were previously canceled without prejudice or disclaimer. No new matter has been added. Reconsideration and allowance of the instant application are respectfully requested.

Rejections under 35 U.S.C. § 103

Claims 1, 3, 5-11, 13, 15-27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. publication no. 2003/0096622 to Moilanen ("Moilanen") in view of U.S. patent no. 5,883,598 to Parl et al. ("Parl"). Claim 25 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Moilanen and Parl and further in view of U.S. publication no. 2001/0022558 to Karr, Jr., et al. ("Karr"). Claims 26-27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Moilanen and Parl and further in view of U.S. patent no. 7,000,015 to Moore et al. ("Moore"). Applicants respectfully traverse these rejections.

Independent claim 1 is directed to a method for locating a mobile terminal within a mobile communication network. Claim 1 recites, among other features, "measuring a set of physical dimensions . . . the set of physical dimensions comprising any combination of physical dimensions selected from the group comprising signal power received by the mobile terminal starting from the base station, timing advance, observed time differences, and time of arrival." The Office Action at page 3 correctly indicates that Moilanen fails to disclose the above-noted features, but contends that Parl at col. 17, lines 12-62 and col. 14, line 22 – col. 15, line 8 discloses the features.

Applicants respectfully disagree that Parl at the cited passages (or any passage for that matter) discloses the above-noted features.

Parl at col. 14, lines 22-28 describes that "Given the knowledge of base station locations and the direction from any two base stations 12 to the object 18, the object's location can be determined by triangulation. Given the direction from several pairs of base stations, the location can be further refined. Such an approach relies on directional estimates, and this method of obtaining direction described thus far is similar to conventional direction finding."

Parl at col. 14, lines 29-37 continues that "The other approach whose description will help clarify the description of the present invention is the PR pseudo-ranging (or Time-Difference-of-Arrival) method. This method involves estimation of phase differences of the phasors to establish the time-differences-of-arrival at any pair of base stations. We begin with the simplest example of our transmitted signal structure, whereby the portable unit 20 transmits tones at two different radial frequencies."

Thus, Parl at col. 14 discloses two different approaches: one based on directional estimates, i.e. estimates of the direction of the signals, and another approach based on TDOA. These approaches are based on portable unit 20 (See Parl at Fig. 1) transmitting tones, i.e. signals, at two different radial frequencies $\omega 1$ and $\omega 2$. See Parl at col. 13, lines 13-25. See also Parl at col. 7, lines 31-57 and Fig. 4 (locator signal tones are transmitted from portable unit 20 to the base stations 12), col. 9, lines 6-24 and Fig. 6 (base stations 12 receive the tones at antennas (208, 210), down covert (250, 252) the received tones, digitize (255, 256) the received tones, perform a correlation function (258, 260, 262, and 264) on the received tones, and transmit the received tones to control station 22), and col. 12, lines 17-27 and Fig. 10 (control station receives location data from base stations 12 and performs location processing (407, 422, 424, 426)). The utilization of tones described in Parl is inapplicable to mobile communications networks as recited in claim 1.

In col. 17, lines 12-62 Parl describes a generalization of the above method to the use of a single tone (i.e., frequency), or a single antenna, and mentions the possibility of including amplitude information, to refine the result. See Parl at col. 17, lines 12-22: "In general, it is noted from the equations (21) and (22) defining Z1 and Z2, that the search for the maximum of $A(x,y)$ reduces to a generalized DF method when only one tone is used and we ignore Z2. If the process of the invention is followed, such a generalized DF method can use the same measurements as the conventional DF method, but combines said measurements in a different way that includes amplitude information which results in a better location estimate. Similarly, the process of the invention can reduce to an optimum generalized PR method when only one antenna is used at each base station and Z1 is ignored."

Thus, even in the generalized method described, Parl does not relate the localization of a mobile terminal in a mobile communication network. In any case, Parl does not disclose features related to a set of physical dimensions that comprises any combination of physical dimensions selected within the group comprising: signal power received by the mobile terminal starting from the base station, timing advance, observed time differences, and time of arrival as recited in independent claim 1.

In the event that the Office elects to maintain a rejection of claim 1 based on Parl, Applicants respectfully request the Office to provide a specific statement as to *how* Parl allegedly discloses the above-noted features recited in claim 1. Applicants submit that Parl is wholly devoid of such a disclosure. Furthermore, Applicants submit that one of skill in the art would not have had an apparent reason to combine Parl with Moilanen to allegedly arrive at the recited features, given the inapplicability of tones to mobile communications networks (e.g., the application of claim 1). As such, claim 1 is allowable for at least these reasons.

Furthermore, as described above, the position location system and method described in Parl is generated on the basis of tones (e.g., frequencies). Parl at col. 9, lines 6-41 and Figure 6 describes that base stations 12 include correlators 258, 260, 262, and 264. Moreover, Parl at col. 9, lines 6-41 describes that the correlators operate synchronously at all base stations 12, and that synchronization can be obtained through the transmission of a reference signal by reference station 16 (see Fig. 1 of Parl), or the use of several other available sources including GPS-based time references. One of skill in the art will appreciate that the above-noted features recited in claim 1 avoid the complexity and errors associated with synchronizing the base stations. See the originally-filed instant application specification at page 3, line 33 – page 4, line 14.[1] As such, notwithstanding whether a combination of Moilanen and Parl is proper, claim 1 represents a non-obvious advance over the combination of references in terms of determined location accuracy in view of the elimination of the synchronization required between base stations. Claim 1 is allowable for at least these additional reasons.

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[1] The cited passage in the instant application specification may also be referenced to the instant application publication, U.S. 2005/0208951, at paragraph [0015].

Independent claim 11 recites features similar to those described above with respect to claim 1. As such, claim 11 is allowable for at least reasons substantially similar to those described above with respect to claim 1.

The remaining claims are allowable for at least the same reasons as claims 1 and 11 described above, and further in view of the additional advantageous features recited therein, because the additional applied references (e.g., Karr and Moore) fail to remedy the deficiencies of Moilanen and Parl described above (notwithstanding whether any combination of the references is proper).

For example, dependent claim 9 recites "interrupting said iterative process when the absolute distance between two successive points is below a determined threshold value." The Office in the Office Action at page 5 analogizes the recited features to paragraph [0063] of Moilanen. Applicants disagree that the cited passage of Moilanen (or any passage of Moilanen, for that matter) discloses the above-noted features recited in claim 9. Instead, Moilanen at paragraphs [0063]-[0064] describes that an additional weight function, s(x), may be added to a weighted error function, wherein the purpose of the s(x) function is to avoid finding local minimum far from an area of interest, and that the function may define a location determination window indicating the area of interest, whereby other areas become excluded areas, such that any locations that are outside the window are excluded from subsequent computations.

The s(x) function of Moilanen does not fairly teach or suggest features related to interrupting an iterative process when an absolute distance between two successive points is below a determined threshold value. More specifically, even assuming (without admitting) that the s(x) function may appropriately be analogized to the threshold value recited in claim 9, the s(x) function still would not serve a purpose of determining *when* to interrupt the iterative process of claim 9 (or more specifically, the iterative process of claim 8 from which claim 9 depends). Instead, the s(x) function of Moilanen merely imposes a (geographical) constraint on how far a minimum may be located. One of skill in the art will appreciate that the features of claim 9 allow for the preservation of computing resources by terminating the processing (e.g., the recited iterative process) when an absolute distance between two successive points is below a determined threshold value. Applicants submit that these advantages are particularly pronounced

in a modern mobile communication network that services a relatively large quantity of mobile terminals because a computing device (e.g., a base station) determining a location with respect to a first mobile terminal can cease performing that determination and devote computing resources (e.g., iterative processing resources) to determining a location of a second, different mobile terminal. Thus, claim 9 represents a non-trivial advance over the references of record, and is allowable for at least these additional reasons.

CONCLUSION

If any fees are required or if an overpayment is made, the Commissioner is authorized to debit or credit our Deposit Account No. 19-0733, accordingly.

All rejections having been addressed, Applicants respectfully submit that the instant application is in condition for allowance, and respectfully solicit prompt notification of the same.

Respectfully submitted,

BANNER & WITCOFF, LTD.

Dated: October 31, 2008   By: /Gary D. Fedorochko/

Gary D. Fedorochko
Registration No. 35,509

1100 13th Street, N.W., Suite 1200
Washington, D.C. 20005-4051
Tel: (202) 824-3000
Fax: (202) 824-3001

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